

Application No. 09/892,472
Date November 25, 2003
Reply to office action of July 30, 2003

Remarks/Arguments

Applicants gratefully acknowledge the thorough Examination to date and have made an effort to fully respond to all the issues raised by the Examiner. Applicants have taken care and believe that no new matter has been introduced by way of this amendment. Reconsideration of the application in view of the above amendments and following remarks is respectfully requested.

Objection to the Drawing

The Applicant has overcome the objection made by the Examiner by submitting new Figures 1 through 4 herewith.

Objection to Claim 1

The Applicant has amended Claim 1 to insert a comma after the phrase "...in the refractive index of said segment..." as required by the Examiner.

Rejection of Claims 1 through 4 under 35 USC 102:

The Examiner has rejected Claims 1 through as being anticipated by Nishiki et al., U.S. Patent No. 6,456,762.

The Examiner states:

"Nishiki et al. U.S.P. No. 6,456,762 teach (Figs 1A-1B, column 3 line 63 through column 4 line 41) a method for increasing refractive index of a portion of an optical fiber comprising: applying a UV laser light source 3 through phase mask 2 form a Bragg grating on an optical fiber 1 while in the process generating a photo-induced refractive index increase (Fig 1A), and a second step in which the UV laser source is used in a trimming process to provide localized heat to a specific area in order to change characteristics of the optical fiber to a required value (Fig 1B), which clearly, fully meets Applicant's claimed limitations. Regarding claim 3, the UV light source would inherently be absorbed as heat into the fiber, said heat diffusing inwardly. Regarding claim 4, the source laser." [underline added for emphasis]

The Applicant respectfully submits that the Nishiki et al. reference is directed toward a different process than that of the present invention. The process, disclosed by

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Nishiki et al., includes forming Bragg gratings by applying ultraviolet (UV) light to an optical waveguide through a phase mask and then adjusting the gratings by applying UV light for trimming the optical waveguide not through the phase mask, as in col. 2, lines 3-6, of the Nishiki reference. In contrast, the present invention involves producing a Bragg grating in an optical fiber using a UV light source, annealing the optical fiber to stabilize the grating, and then trimming the grating using a point source of heat to selectively reduce the refractive index change for selected gratings. The Examiner is referred to paragraph [0008] where the statement of invention is clearly defined. The Nishiki et al. reference does not teach "trimming" with a "point source of heat", such as CO₂ laser as disclosed in paragraphs [00017] to [00024] of the instant application, after annealing the optical fiber. In the present invention, the use of a "point source of heat" is advantageous over the prior art in that no further annealing is required by utilizing a point source of heat to trim the grating. As such, the Applicant believes that the Claims, as amended, are not anticipated by the Nishiki et al. reference.

The Applicant has amended the steps of Claim 1 to more clearly define the present invention as follows:

- "a) exposing said portion to a UV light source, thereby causing an increase in the refractive index of said portion;
- b) annealing said optical fiber to stabilize said increase in the refractive index; and
- c) exposing a segment of said portion to a point source of heat, thereby reducing said increase in the refractive index of said segment, said point source of heat having sufficient energy to reduce said increase in the refractive index."

As the defined steps in the process of Claim 1 are not disclosed nor fairly suggested by the Nishiki et al. reference, the Applicant respectfully submits that the claim is patentable over the cited reference.

With regard to Claim 2, the Applicant has amended the claim to add "UV" prior to the phrase "light source". This amendment further defines the subject matter of the claim by defining the type of light source. As Claim 2 is dependent on base claim 1, the

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Applicant incorporates the earlier remarks made with reference to the patentable subject matter.

With regard to Claim 3, the Applicant has amended the claim to add the phrase "from a CO₂ laser" after the phrase "coherent light". This amendment further defines the element from where coherent light is produced. As Claim 3 is dependent on base claim 1, the Applicant incorporates the earlier remarks made with reference to the patentable subject matter.

With regard to the rejection of Claim 4, no further remarks are required as the Applicant has deleted the claim.

In view of the earlier remarks and amendments made to Claims 1 through 3, the Applicant believes that Claims 1 through 3 can no longer be deemed anticipated by the Nishiki et al. reference. Thus, the Applicant respectfully submits that the Claims 1 through 3 are in condition for allowance.

Rejection of Claim 5 under 35 USC 103:

As the Applicant has deleted Claim 5, no further remarks are required with regard to this rejection.

Allowable Subject Matter:

The Examiner has allowed Claims 6 through 13 over the cited prior art. However, the Applicant respectfully submits that the Examiner's statements on the prior art are not entirely correct. As mentioned in earlier remarks, the prior art does not teach nor fairly suggest trimming with a point source of heat after annealing the optical fiber. However, the Applicant does concur with the Examiner's statement that the prior art does not teach the "measuring and testing aspects for the signal response of the claimed invention".

Conclusion

Applicant respectfully submits that the outstanding rejections under 35 USC 102 and 35 USC 103 have been overcome by the above amendment. Applicant has made an

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effort to substantially eliminate any unclear details within the claims and believe that no new matter has been entered during this process. Applicant respectfully submits that all of the claims presently standing in the application are patentably distinguished from the teachings of all references of record either taken alone or in any combination.

Accordingly, reconsideration and allowance of this application is respectfully solicited.

Respectfully submitted



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Attachments (2 sheets of drawings)